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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

Mr. William Caton
Acting Secretary
Federal Communications Commission
1919 M Street, Suite 222
Washington, D.C. 20554

Ex Parte

RE: Amendment of the Commission's Rules to Provide for Unlicensed NII/SUPERNet Operations in the 5 GHz Frequency Range **(ET Docket No. 96-102)**

Dear Mr. Caton:

On Thursday, September 12, 1996, Tim Wilkinson and I, on behalf of Hewlett-Packard Company, met with Richard M. Smith, Dr. Lynn Remley, Charles J. Iseman, and Tom Derenge to discuss general issues relating to this proceeding. In particular, we discussed HP's interest in the NII/SUPERNet band, and the attached material on sharing rules for the band.

Two copies of this notice are being submitted to the Secretary of the FCC in accordance with Section 1.1206 (a)(1) of the Commission's Rules.

Please direct any questions regarding this meeting to me.

Sincerely,

Cynthia Johnson

Cynthia Johnson
Government Affairs Manager

Attachment

cc: Dick Smith
Lynn Remley
Charles Iseman
Tom Derenge
Mike Marcus
Bruce Franca

No. of Copies rec'd 0+1
List ABCDE

RULES FOR THE NII/SUPERNET BAND

Tim Wilkinson

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Basic Requirements

- *To enable coexistence of like and unlike systems*
- *The rules should be as simple as possible to ease the deployment of devices and systems*
  - easy to develop and easy to test conformance
- *The rules must be designed to support multimedia communications (rates and latencies)*
  - HIPERLAN is a good reference system
- *The rules should favor high transmission rate systems but not disallow lower transmission rates*
  - rate back-off is acceptable and necessary
- *The rules should be designed to optimize international device and system compatibility*
  - systems may appear in the US before Europe

Some realities of communications

- *Limits in bandwidth and power do not translate to limits in rate and range*
  - rate can be increased with multilevel modulation
  - range can be increased with low rate coding
  Limits in bandwidth and power simply constrain the rate/range tradeoff - a price has to be paid
- *A high modulation efficiency does not guarantee a high spectral efficiency, this depends on re-use which depends on interference tolerance, protocol efficiency and etiquette efficiency*

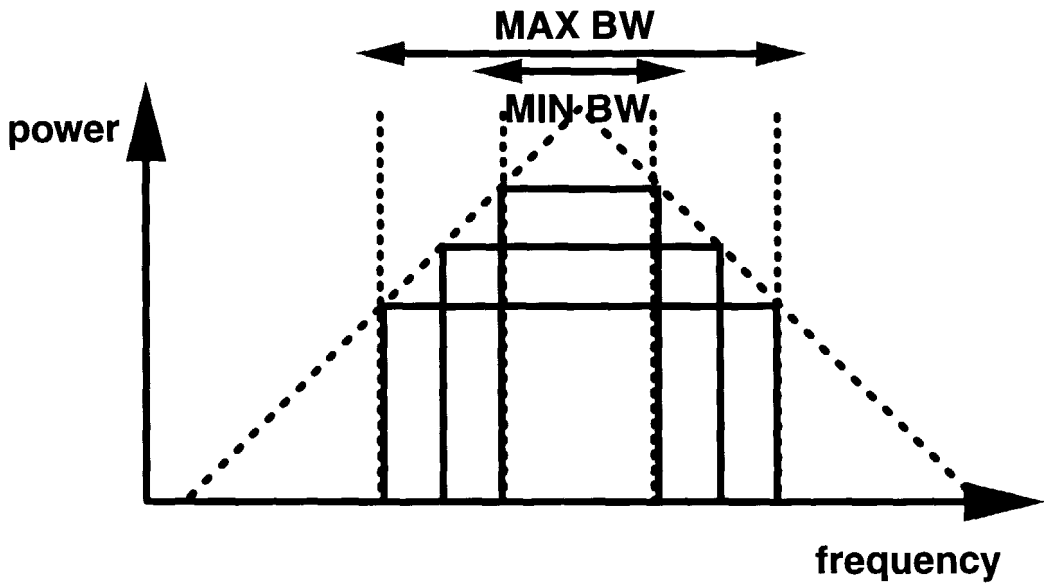
Some difficulties with definitions

- *What is the definition of bandwidth?*
  what is the averaging period?
  DSSS spread BW, FHSS modulation BW?
  This will arise in... bandwidth restrictions,
  modulation efficiency requirements,
  and power spectral density limits
- *What is the definition of rate? uncoded data rate,*
  coded data rate, transmission rate or chip rate?
  This will arise in... rate restrictions
  and modulation efficiency requirements

Interference management

- *Interference avoidance*
  - to do this you must restrict the behavior of systems in various dimensions eg time, frequency to enable action to be taken to avoid interference with LBT or otherwise eg UPCS etiquette
  - easy for like systems, difficult for unlike systems
  If restrictions do not allow a system to reliably discover the interference environment they will default to interference randomization
- *Interference randomization*
  - to do this you must somehow limit PSD with spread spectrum eg ISM band rules

HP Proposal - examination



- *LBT optional, not mandatory*
- *Bandwidth restrictions to assist in interference avoidance*
- *Maximum bandwidth of 25MHz*
- *Minimum bandwidth of 10MHz*
- *Minimum modulation efficiency to favor high rate systems*
- *0.66Bps/Hz proposed*
- *Lower rates enabled with low rate coding, complexity penalty*
- *Higher rates enabled with multilevel modulation*

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